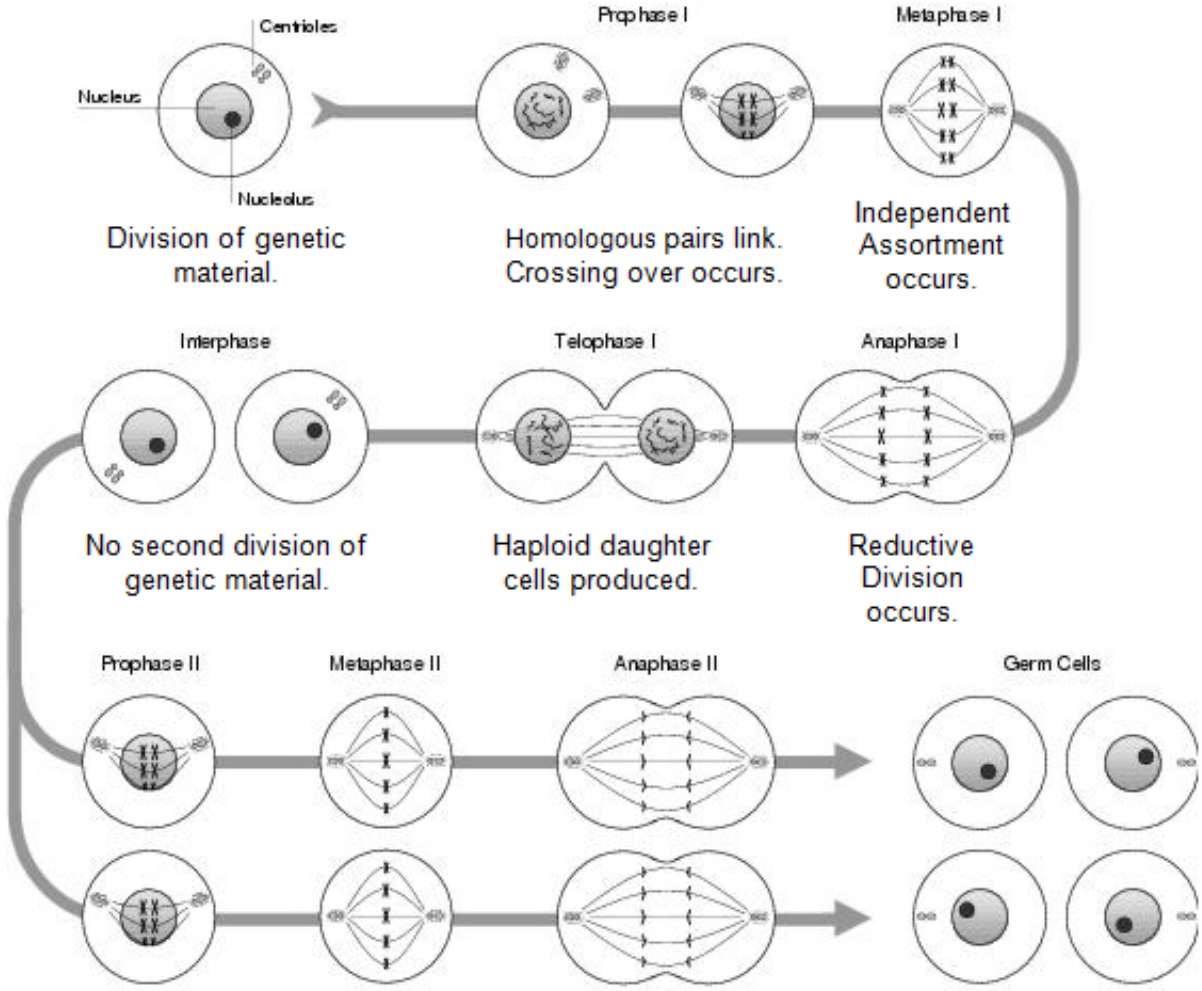
Unit 8 Meiosis

Term 4 2011-12

Stages of Meiosis:



Second division is similar to mitosis, but it has only half the genetic material.

Unit 8 Meiosis
Chapter 7

Unit Must Knows	Key Vocabulary
1. Students will be able to summarize the events that occur during meiosis and relate crossing over, independent assortment, and random fertilization to genetic variation. a. Meiosis reduces the number of chromosomes by half to form reproductive cells. When the reproductive cells unite in fertilization, the normal diploid number is restored. b. During meiosis 1, homologous chromosomes separate. Crossing over during prophase 1 results in the exchange of genetic material between homologous chromosomes. c. During meiosis 2, the two chromatids of each chromosome separate. As a result of meiosis, four haploid cells are produced from one diploid cell. d. Independent assortment, crossing over and random fertilization contribute to produce genetic variation in sexually reproducing organisms. **2. Students will understand the role of spermatogenesis and oogenesis.** a. In sexually reproducing eukaryotic organisms, gametes form through the process of spermatogenesis in males and oogenesis in females. **3. Students will be able to differentiate between asexual and sexual reproduction, explain the different types and evaluate the genetic and evolutionary advantage and disadvantage between them.** a. Asexual reproduction is the formation of offspring from one parent. The offspring are genetically identical to the parent. b. A disadvantage to asexual reproduction in a changing environment is the lack of genetic diversity among the offspring. c. Sexual reproduction is the formation and union of gametes. The offspring are genetically different from the parents. d. Sexual reproduction increases variation in the population by making possible genetic recombination.	• Meiosis • Crossing over • Independent assortment • Spermatogenesis • Sperm • Oogenesis • Ovum • Asexual reproduction • Clone • Sexual reproduction • Fertilization

Test Prep CheckList

Have I completed…

Key Terms…

- ☐ **Completed** and **know** all the Word Parts for this unit and the unit before?
- ☐ **Defined** and **studied** (flash cards help) the Key Terms for the Unit?

Reading Circles…

- ☐ **Completed** each of the reading circles for each of the sections in the book?
- ☐ **Taken** and **corrected** each of the Reading Quizzes for each section in the book?

Must Knows…

- ☐ **Identified** and have **written** the appropriate Must Know on the top of each page in the packet
- ☐ **Studied**, **Know** and **asked questions** for each of the Must Knows for this Unit.

Notes…

- ☐ **Taken** Cornell Notes for each day of the unit.
- ☐ **Generated** at least 5 questions for each page of notes.
- ☐ **Summary** is written for each page of notes

Organization…

- ☐ Everyday's Must Knows and Homework is written on the calendar or in an assignment notebook.
- ☐ Cornell Notes are stored in binder.

Unit 8 Key Vocabulary Terms

Define the following…

Meiosis-

Crossing over-

Independent assortment-

Spermatogenesis-

Sperm-

Oogenesis-

Ovum-

Asexual reproduction-

Clone-

Sexual reproduction-

Fertilization-

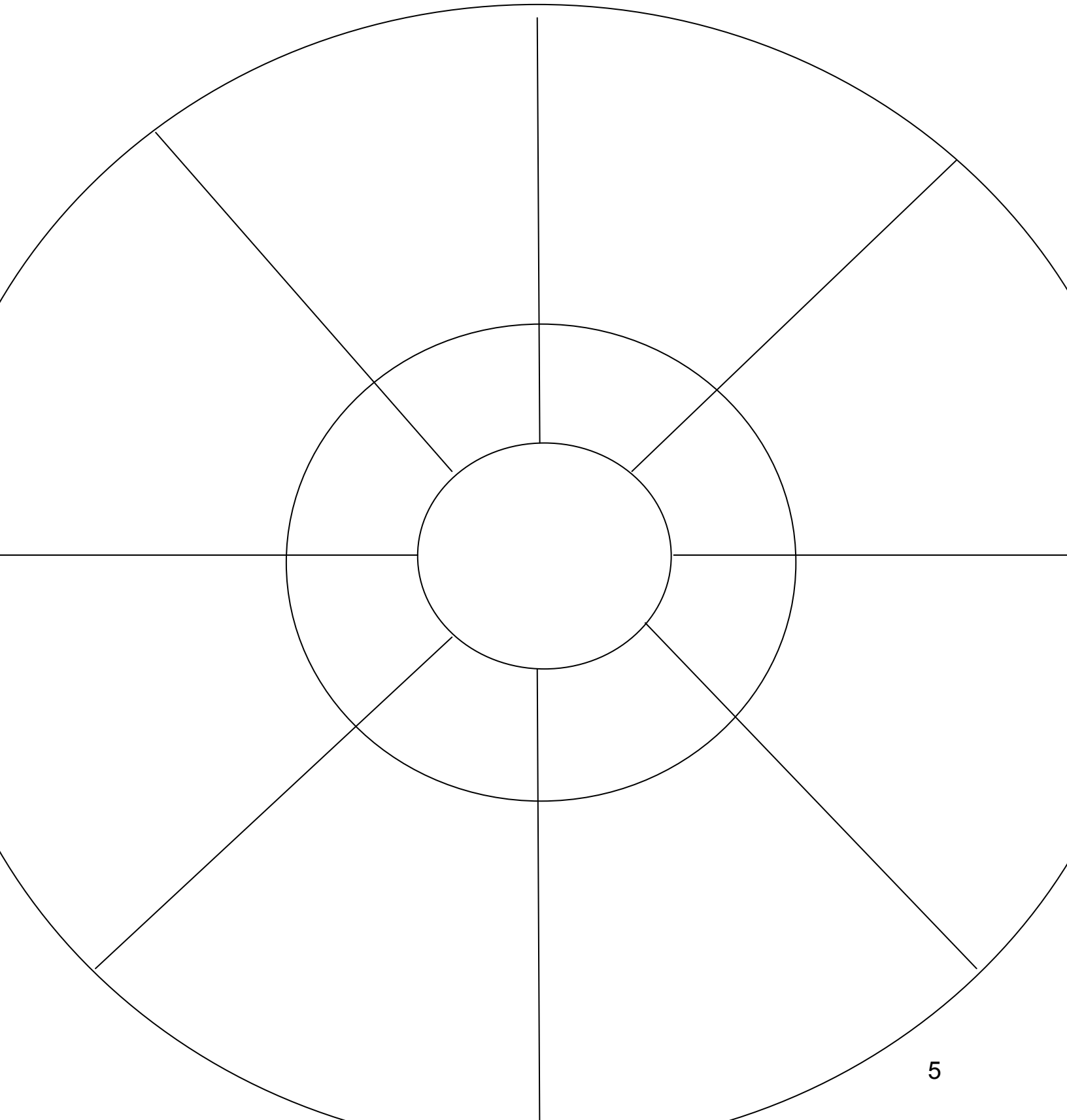
Must Knows:

_____

_____

_____

_____



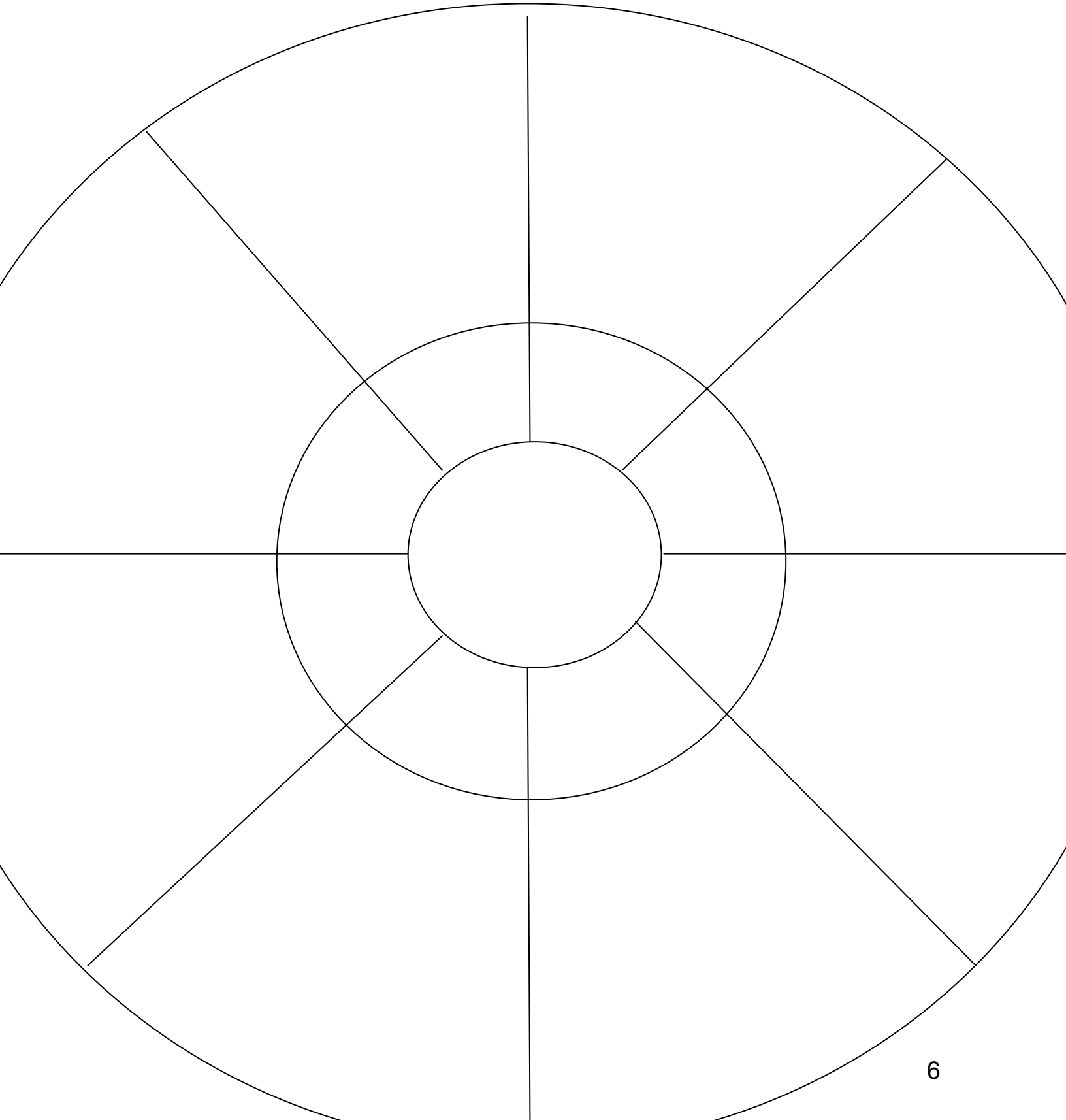
Must Knows:

_____

_____

_____

_____



Bell Ringer Worksheet

Question:	**Date:**
Answer:	

Question:	**Date:**
Answer:	

Question:	**Date:**
Answer:	

Question:	**Date:**
Answer:	

Question:	**Date:**
Answer:	

Question:	**Date:**
Answer:	

Cornell Notes	Topic/Objective:	Name:
AVID Decades of College Dreams		Class/Period:
		Date:

Essential Question:

Questions:	Notes:

Summary:

Cornell Notes	Topic/Objective:	Name:
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		Date:

Essential Question:

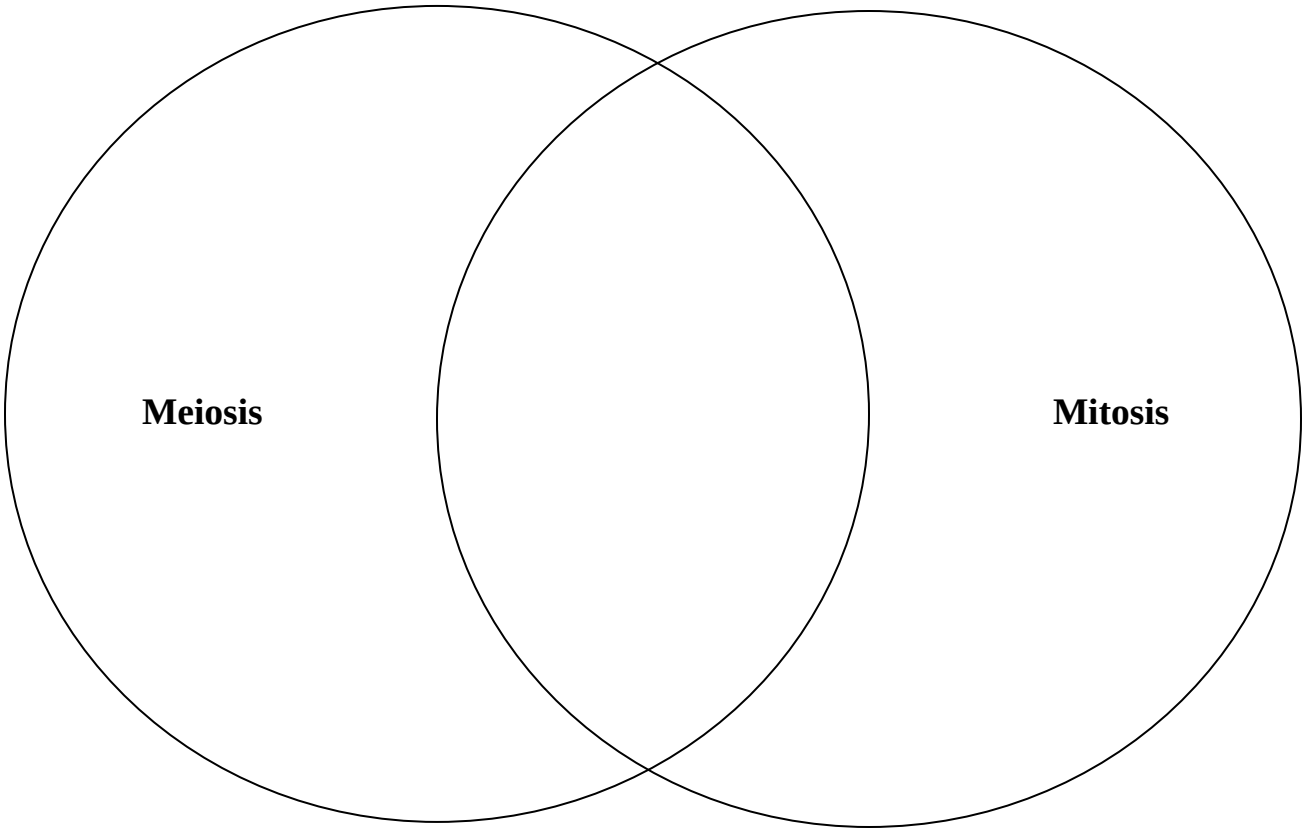
Questions:	Notes:

Summary:

Name: _____

Meiosis v. Mitosis

Place the following statements in the appropriate area in which they belong.

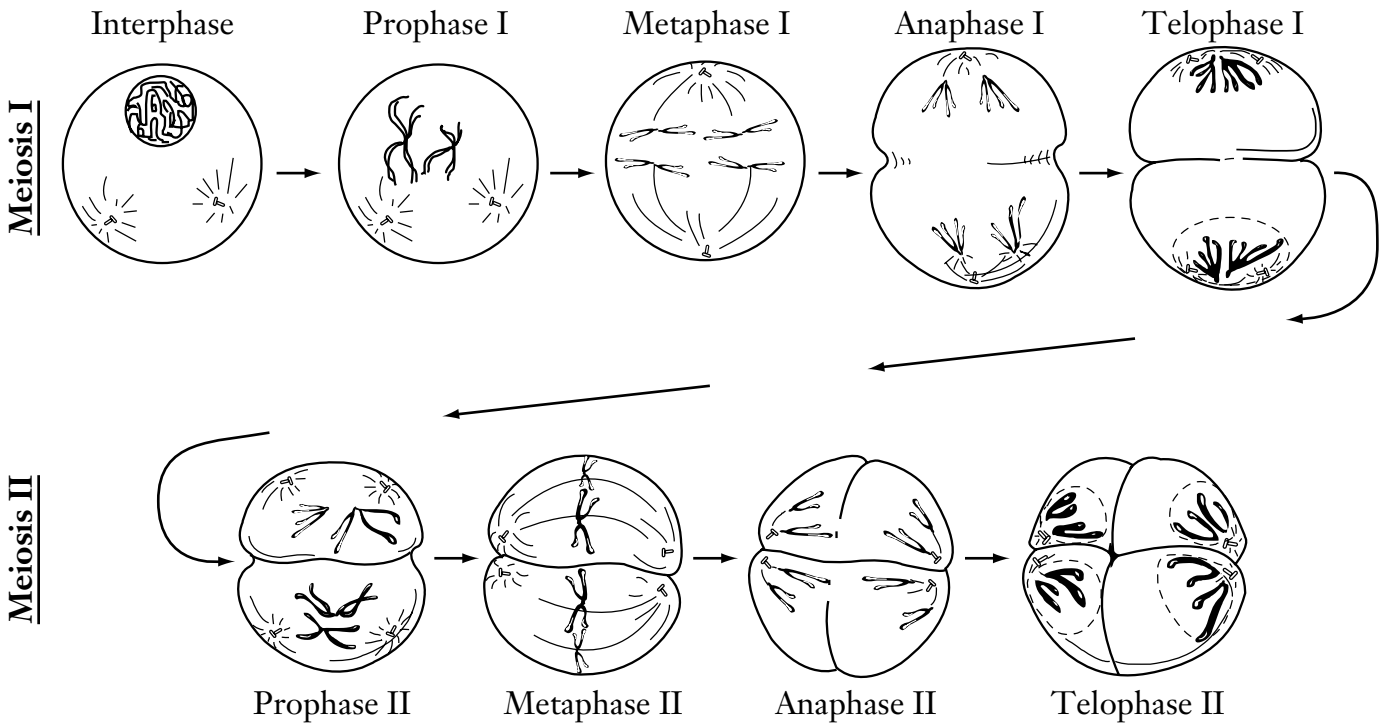


Occurs in the ovaries	Is essential to life	Promotes genetic diversity	Produces a diploid cell	Produces 4 cells
Produces 2 cells	Produces identical cells	Produces Sex Cells	Occurs in the cells of your liver	Produces cells that are completely different
Starts with a diploid cell	Occurs for the purpose of replacing damaged cells	Produces haploid cells	Has a stage named Interphase	Undergoes two cell divisions

CHAPTER 12 MENDEL AND MEIOSIS

Section 12.2 Meiosis

Study the Diagram



Use the diagram to answer the questions.

1. Meiosis I begins with one cell. By the end of Meiosis II how many cells are formed?

_____

2. Name a physical process that occurs more than once during meiosis. Answers will vary. _____

_____

_____

3. Cell division by meiosis is a way to produce gametes that have only half the number of chromosomes of the parent cell. Why is this important? _____

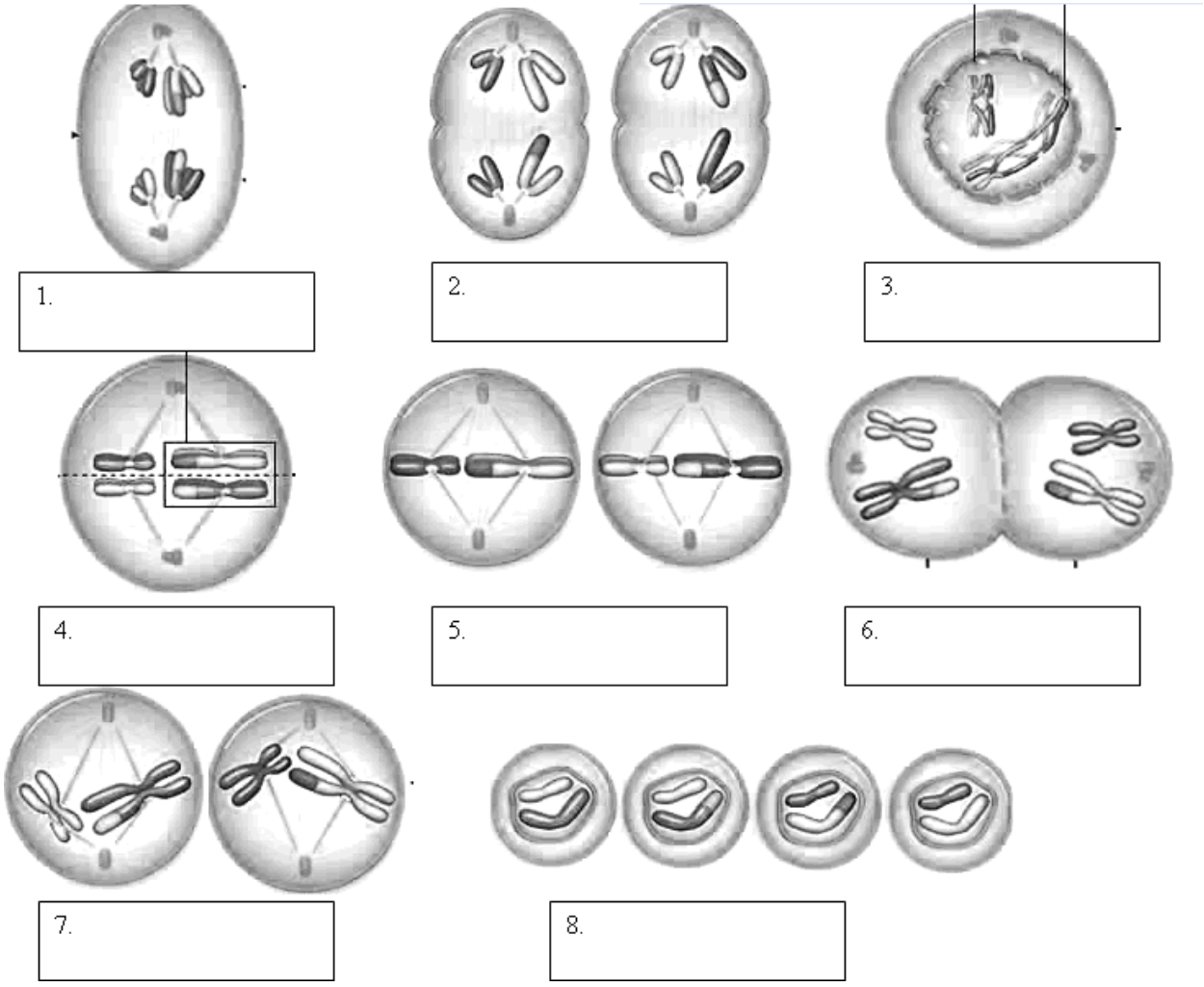
_____

_____

Phases of Meiosis

Name: _____

Name of Phase	Description
1.	Homologous chromosomes pair up and form tetrad
2.	Spindle fibers move homologous chromosomes to opposite sides
3.	Nuclear membrane reforms, cytoplasm divides, 4 daughter cells formed
4.	Chromosomes line up along equator, not in homologous pairs
5.	Crossing-over occurs
6.	Chromatids separate
7.	Homologs line up alone equator
8.	Cytoplasm divides, 2 daughter cells are formed



Meiosis Worksheet

Use the links in this worksheet and answer the questions listed.

Fill in all answers – feel free to use another sheet if you would prefer to.

1. Click here http://biologyinmotion.com/cell_division/.
2. Complete the “practice mitosis” and “practice meiosis” exercises:

   Describe:

3. In order to separate the chromosomes in half you will have to use the “shift” key
4. How did the results of the two practice exercises differ? (Your own words)

5. Click here http://www.pbs.org/wgbh/nova/baby/divi_flash.html
6. How many steps to complete Mitosis? _____

   Meiosis? _____
7. Go to the last step in Meiosis. What does it say about “daughter cells”?

8. http://biostudio.com/d_%20Meselson%20Radding%20Model%20Crossing%20Over.htm

   
9. Work through the animation … What is crossing over?
10. Does crossing over give any advantages to the cell (or ultimately the organism)? (if so what… describe)

11. Recently in the media news there has been a lot of discussion about “stem cells”. Click here http://www.dnalc.org/stemcells.html
12. What is a blastocyst?
13. How many cells does it have?
14. On the next slide what does it say about the potential of stem cells?
15. Where are the cells placed to develop?
16. Look at the last slide. What do they hope these cells can be used for?
17. Here is another picture of a blastocyst the pink cells are the stem cells. Where are they located?
18. This shows you how big it is. Compare to the dime.
19. How many days after fertilization does the blastocycst implant?

    _____
20. Look at the following about cancer ;

    http://www.pbs.org/wgbh/nova/cancer/grow_flash.html On the second to last slide it talks about why cancer cells are so dangerous. What does “metastasize" mean ?
21. And why is it so dangerous?
22. Here are some more links you can observe on these topics; (just for fun)

Photos of Lilly meiosis stages;

23. Compare them to what you saw under the microscope (if you have completed the lab – or observe them – it will help you on the lab coming up soon.

Lilly Meiosis 1

Lilly Meiosis 2

Lilly Anther (pollen grains to contain sperm cells)

Lilly Ovary (to become egg cells or ova)

** How do the Lilly sperm cells and egg cells compare?

Check out the following videos:

24. Meiosis

25. Mitosis (Click on the video that shows a comparison between Mitosis and Meiosis) Using all we have learned, list at least 3 differences between Meiosis and Mitosis – in well written "high school sentences"!

Back Print

Name _____ Class _____ Date _____

Skills Worksheet

Test Prep Pretest

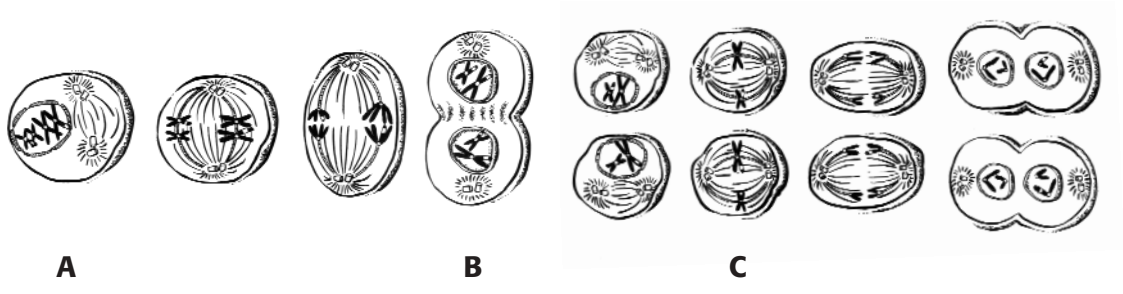
Complete each statement by writing the correct term or phrase in the space provided.

1. Asexual reproduction limits _____ diversity.
2. Spermatogenesis produces _____ sperm cells.
3. Asexual reproduction methods include _____ ,
   fragmentation, and _____ .
4. In the haploid life cycle, gametes are produced by _____ ,
   and the zygote is produced by _____ .
5. When corresponding portions of chromatids on two homologous
   chromosomes change places, _____-_____
   has occurred.
6. Only one ovum is produced by _____ .
7. In plants that have alternation of generations, the haploid
   _____ produces the gametes.
8. Increased genetic variation often increases the rate of _____ .
9. Meiosis in plants often produces _____ , haploid cells that later lead to the production of gametes.
10. Crossing-over is an efficient way to produce _____
    _____ , which increases genetic diversity.

Name _____ Class _____ Date _____

Test Prep Pretest *continued*

Questions 11–14 refer to the figure below.



A **B** **C**

11. The process shown above is called _____ .

12. In the process shown above, label *A* refers to _____ .

13. In the process shown above, label *B* refers to _____

and _____ .

14. In the process shown above, label *C* refers to _____ .

Read each question, and write your answer in the space provided.

15. Describe the similarities and differences between the formation of male and female gametes.

_____

_____

_____

_____

_____

16. Identify and describe the three types of asexual reproduction.

_____

_____

_____

_____

Name _____ Class _____ Date _____

Test Prep Pretest *continued*

17. What is the difference between anaphase I and anaphase II? Why is the difference significant?

18. Describe the haploid and diploid life cycles.

19. Describe the advantages and disadvantages of sexual reproduction.

20. How does crossing-over affect evolution?

MEIOSIS WORKSHEET – KNOWING THE STEPS IN CREATING YOUR GAMETES!

Instructions: Below are drawings in the stages of meiosis. Cut these out and put them in the proper order for meiosis on the next sheet provided. You will also need to record the main events that are happening at each stage.